REMARKS

Claims 1, 3, 5, 7-9, 12, and 14 are now pending in the application. Claims 1, 12, and 14 have been amended. Claims 10-11, 13, and 15 have been canceled. Support for the foregoing amendments can be found throughout the specification, drawings, and claims as originally filed. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

CLAIM OBJECTION

Claims 1, 12, and 14 are objected to because of certain informalities. Applicant has amended claims 1, 12, and 14 to overcome these objections. Therefore, reconsideration and withdrawal of this objection are respectfully requested.

REJECTION UNDER 35 U.S.C. § 112

Claims 12-15 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. This rejection is respectfully traversed.

To overcome these rejections, Applicant has canceled claims 13 and 15 and amended claims 12 and 14. Therefore, reconsideration and withdrawal of this rejection are respectfully requested.

REJECTION UNDER 35 U.S.C. § 102

Claims 1, 3, 5, 8, and 9 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Taniguchi (U.S. Pat. No. 6,122,250). This rejection is respectfully traversed.

Claim 1 recites

> mapping more than one of the minimum protection units by each of the nodes into different ones of the plurality of logic-systems, each of the plurality of logic-systems including two minimum protection units of at least one of the nodes; wherein a first logic-system of the plurality of logic-systems respectively adopts a first protection mode of multiplex section protection, path protection or sub-network connection protection; a second logic-system of the plurality of logic-systems adopts a second protection mode of multiplex section protection, path protection or sub-network connection protection;

As further explained below, the above limitations require that some minimum protection units (e.g. VC4s in some of the embodiments) of an optical port operate in accordance with a first protection mode while some other minimum protection units of that port operate in accordance with the second protection mode. (See section a. below)

In contrast, Taniguchi simply does not teach this limitation. Rather, Taniguchi at best shows that <u>all</u> the virtual containers of a node operate in a single protection mode initially and then all switch to a different protection mode. (See section b. below)

<u>a.</u>

Claim 1 recites a virtual protection method for a fiber path in a network having more than one node. This virtual protection method requires that <u>resources of each optical port of each node device in the network are firstly divided into multiple minimum protection units</u>; and secondly, and <u>the multiple minimum protection units are mapped into different ones of a plurality of logic-systems</u>. In other words, claim 1 requires dividing the network into a plurality of logic-systems. Among those logic-systems, a first logic-system adopts a first protection mode of multiplex section protection, path protection, or sub-network connection protection; a second logic-system adopts a second protection mode of multiplex section protection, path protection or sub-network

connection protection. When protection for the services carried by a logic-system which adopts a protection mode of multiplex section protection is need, each of the nodes belonging to the logic-system performs a multiplex section protection. When protection for the services carried by a logic-system which adopts a protection mode of path protection is need, each of the nodes belonging to the logic-system performs a path protection. When protection for the services carried by a logic-system which adopts a protection mode of sub-network connection protection is need, each of the nodes belonging to the logic-system performs a sub-network connection protection. That is, claim 1 requires different logic-systems adopt different protection modes, such as multiplex section protection, path protection, sub-network connection protection, and even 1+1 protection, 1:N protection. Each logic-system can perform an automatic protection switch independently and individually without affecting the services transmitted via other logic-systems.

Taking an STM-16 system as an example, in a STM-16 system each optical port contains 16 VC4. One VC4 may be selected as a minimum protection unit and the 16 VC4 is divided into two groups -- a first group includes 6 VC4s and a second group includes 10 VC4s. The 16 VC4s can be mapped into two logic-systems; one logic-system includes the first group (6 VC4s) and the other logic-system includes the second group (10 VC4s). Assuming that the first logic-system of the two logic-systems adopts the multiplex section protection and the second logic-system adopts the path protection. In this case, when protection for the services carried by the first logic-system is active, the node performs a multiplex section protection to the first logic-system only involving in the first group of VC4s and without affecting the VC4s of the second logic-system.

That is, only 6 VC4s in the node operate in accordance with multiplex section protection and the other 10 VC4s does not execute multiplex section protection. While when protection for the services carried by the second logic-system is need, the node performs a path protection to the second logic-system involving only the 10 VCs in the second group and without affecting the 6 VC4s of the first logic-system.

b.

In this office action, the Examiner states that Taniguchi discloses mapping the virtual containers to the logic systems (i.e. sending a virtual container via the nodes in the ring) and also multiplex section protection, path protection, or sub-network connection protection (Figure 32). This assertion is respectfully traversed.

Taniguchi at best shows a ring transmission system of a bi-directional line switched ring type comprising nodes (A) to (F) connected by ring transmission lines RL. The request indicating the transmission line failure is indicated by the K1 and K2 bytes in the SOH of the frame. One skilled in the art would appreciate that the protection mode adopted by the ring illustrated in Fig. 32 of Taniguchi is traditional multiplex section protection; the K1 and K2 byte in the SOH of the frame are used to indicate a transmission line failure. For each STM-N frame, there is only ONE K1 and K2 bytes. Moreover, the one or more STM-0 transmitted via the nodes of the ring have a same protection mode. Thus, since in Taniguchi a traditional multiplex section protection is adopted, Taniguchi at best shows when protection of a service transmitted in the ring transmission system is needed, all services are switched.

Again taking an STM-16 system for example, when a traditional multiplex section protection is adopted, if protection of a service is active, all 16 VC4s are switched

simultaneously for there is only one set of K1 and K2 byte in the STM-16 system. That is, the features shown in Taniguchi do not teach one skilled in the art in this example that only 6 VC4s in each node execute multiplex section protection for the STM-16 system.

In contrast, claim 1 requires that the network be first divided into a plurality of logic-systems and that each logic-system can perform an automatic protection switch independently and individually without affecting the services transmitted via other logic-systems; the switching of one logic-system does not affect other logic-systems.

c.

In view of above discussion, the content shown in Taniguchi (e.g. "sending a virtual container via the nodes in the ring" which is specifically cited by the Examiner) does not disclose the concept of logic system. And Taniguchi fails to anticipate the features of

> mapping more than one of the minimum protection units by each of the node into different ones of the plurality of logic-systems, …
>
> [wherein]a first logic-system of the plurality of logic-systems respectively adopts a first protection mode of multiplex section protection, path protection or sub-network connection protection; a second logic-system of the plurality of logic-systems adopts a second protection mode of multiplex section protection, path protection or sub-network connection protection, …
>
> wherein when protection for the services carried by a logic-system which adopts a path protection is needed, performing a path protection by each of the node belonging to the logic-system;
>
> wherein when protection for the services carried by a logic-system which adopts a sub-network connection protection is needed, performing a sub-network connection protection by each of the node belonging to the logic-system

in claim 1.

Thus, Applicant respectfully submits that claim 1 cannot be anticipated by Taniguchi.

Claim 8 recites a device having similar limitations to the above distinguishing features of claim 1 and, thus, also defines over Taniguchi.

With respect to claims 3, 5, 7 and 9, without addressing the assertion in the Office action, which are not conceded, Applicant submits that they dependent directly or indirectly from claims 1 and 8 and therefore patentably distinguish from Taniguchi.

REJECTION UNDER 35 U.S.C. § 102 AND § 103

Claim 7 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Taniguchi in view of Russell et al. (U.S. Pat. No. 6,917,630). This rejection is respectfully traversed.

Claims 12 and 14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Taniguchi in view of Barker et al (U.S. Pat. No. 2003/0007513). This rejection is respectfully traversed.

With respect to claim 7, Applicant submits that it defines over Taniguchi by virtue of its dependency from claim 1. Further, Russell appears silent about the above distinguishing features of claim 1 and, thus, fails to cure the deficiencies of claim 1.

With respect to claims 12, it recites

> instructing a node assigned to both the first logic-system and the second logic-system to selectively switch each of the virtual containers mapped to the first or second logic-system and received by the node in accordance with the protection mode of the logic-system to which that received virtual container is mapped, and further including
> switching, at the node, the virtual containers respectively mapped to the first and second logic-systems in accordance with respective

different ones of normal working mode, passing working mode, bridging working mode, and switching working mode[.]

It is amply clear that claim 1 requires that some of the virtual containers received by a single optical port are switched in a first mode while some other virtual containers received by that court are switched in a second mode. The Examiner admits that Taniguchi does not disclose selectively switching the virtual containers, but states that Barker discloses the above features. This assertion is respectfully traversed.

More specifically, the Examiner asserts that "Baker discloses a switching architecture supporting automatic protection switching that switches frames comprising virtual containers" and specifically cites figures 3 and paragraph 0100-0101.

As argued above, Taniguchi at best shows that all virtual containers of a node operate in a single protection mode and all the virtual containers are switched in accordance with that protection mode. To arrive at claim 12 and cure the deficiencies of Taniguchi, Baker must teach one skilled in the art switching different virtual containers in accordance with different protection mode; that is, some virtual containers of the optical port are switched in accordance with a first protection mode while some other virtual containers of that port are switched in accordance with a second protection mode. Applicant submits that Baker fails to do so.

For ease of reference, paragraphs 0100-0101 of Baker are reproduced below:

> [0100] With reference to FIG. 3, there is depicted a device for combining at least two data signals having an input data rate into a single data stream having an output data rate being higher than the input data rate for transmission on a shared medium or vice versa in form of a STM-1 to STM-64 SDH/SONET framer. The STM-1 to STM-64 Framer described in the following is based on a data multiplexing or context switching architecture which allows a single framer to handle multiple STM-N frames with N={1, 4, 16, 64} up to an aggregate data rate corresponding to STM-64 (STS-192 or OC-192 in SONET notation), i.e.,

9.96 Gb/s. These frames may use the corresponding sets of VC-4-xc, x={1, 4, 16, 64<=N} virtual containers. The support of VC-3-xc, x={3, 12, 48, 192} may also be possible. Since the units in the data path work on different ports/frames/VC-4s with each clock cycle, status information of the unit must be stored per frame or VC-4. There is information which must be stored per frame and unit or per VC-4 and unit and there is information which must be stored per frame or per VC-4 which is used by several units in the data path. The data path width for the STM-1 to STM-64 framer is chosen to 9 byte.

[0101] The data multiplexing architecture advantageously allows easy implementation of on-chip support for add-drop, digital cross-connect and automatic protection switching functions of SDH/SONET. If these system level functions are implemented the framer is applicable not only as CPN path termination, but also as WAN (Wide Area Network) multiplex section or digital cross-connect equipment.

The above portions of Barker at best show a device for combining at least two data signals having an input data rate into a single data stream having an output data rate being higher that the input data rate for transmission on a shared medium or vice versa in form of a STM-1 to STM-64 SDH/SONET framer. It does not discuss protection modes and, thus, cannot teach one skilled in the art selectively switching the virtual containers in accordance with different protection modes.

The Supreme Court in KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385, 1395-97 (2007) identified a number of rationales to support a conclusion of obviousness. The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in KSR noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit. Exemplary rationales that may support a conclusion of obviousness include:

(A) Combining prior art elements according to known methods to yield predictable results;

(B) Simple substitution of one known element for another to obtain predictable results;

(C) Use of known technique to improve similar devices (methods, or products) in the same way;

(D) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;

(E) "Obvious to try" - choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;

(F) Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art;

(G) Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

Applicant submits that the features shown in paragraphs 0100-0101 of Barker with respect to data multiplexing do not support any of the above rationales for teaching, e.g., a predictable method or solution for selectively switching virtual containers in accordance with different protection modes. Therefore, Applicant respectfully requests the Examiner articulate the reasons why claim 12 is obvious in view of the cited art.

Moreover, as discussed above, Taniguchi is silent about the features "dividing resources of each optical port by each of the nodes in the fiber path into multiple minimum protection units", "defining a plurality of logic-systems in the network, each of the logic systems including a physical media and carrying services, the physical media including nodes and fiber connecting those nodes" and "mapping virtual containers transmitted in the network to different ones of the plurality of logic-systems" of claim 12.

In view of the above discussion, it is respectfully submitted that claims 12 and 14 are patentable over Taniguchi in view of Barker. Therefore, the rejection should be withdrawn.

<u>CONCLUSION</u>

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

Dated: <u>June 17, 2010</u>

By: <u>/Joseph M. Lafata/</u>
Joseph M. Lafata, Reg. No. 37,166

HARNESS, DICKEY & PIERCE, P.L.C.
P.O. Box 828
Bloomfield Hills, Michigan 48303
(248) 641-1600

JML/PFD/evm
14533109.3
15632003.1